IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: Asaf Adi	Application No.: 10/697184
	Confirmation No.: 8188
Filed: 10/30/03	Art Unit: 3629
For: Method and System for Active Monitoring of Dependency Models	Examiner: Chumpitaz, Bob R.

DECLARATION UNDER 37 CFR § 1.132

Mail Stop AF
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

I, the undersigned, Opher Etzion, hereby declare as follows:

1) I am an inventor in the patent application identified above, and an employee of the assignee hereof. My academic degrees are: B.A., 1980 (Magna Cum Laude) from Tel Aviv University, Tel Aviv, Israel, with specialization in Logic; M.B.A. (1983) from Tel Aviv University in Operations Management; and Ph.D. (1990) from Temple University, Philadelphia, PA, in Computer Science, with specialization in Databases.

2) I have worked in the field of database and event processing technology for more than 30 years. During the period 1990 – 1998 I held a faculty position at the Technion, Haifa, Israel in the Faculty of Industrial Engineering and Management.

3) I have been employed at IBM Research Laboratory, Haifa, Israel since 1997. My responsibilities at IBM have included

management of the active middleware technologies activities in the Research Laboratory. During the years 2005-2008 I have been the Lead Architect of event processing in IBM Websphere, and since 2008 have been Scientific Leader in event processing technologies in IBM Research and chair of the Event Processing Technical Society. I am an author of over seventy publications and books in the fields of databases and event processing, an author of a forthcoming book on event processing and an inventor of two patents and three pending Applications in the field of database, situation management and event processing technology.

4) As a result of my faculty and supervisory experience and my experience in assimilating the above-noted technologies in customer operations, I am well acquainted with the capabilities and limitations of the person ordinarily skilled in the art in the field of the invention hereof.

5) The Examiner has rejected claims 3-4, 8 and 27 under U.S.C. § 103(a) as being unpatentable over Mori *et al.*, U.S. Patent Application Publication No. 2003/0055695 (Mori) in view of J. Bailey, A. Poulovassilis and P. Wood: "An Event-Condition-Action Language for XML" (Pub. 2002) (Bailey), and further in view of H. Herbst, G. Knolmayer, T. Myrach and M. Schlesinger: "The specification of business rules: A comparison of selected methodologies" (Pub. 1994) (Herbst).

6) Mori discusses dependence relations among tasks in a project to be used for effect analysis. The dependency types are restricted to precedence relations among tasks within a project, which does not cover many of the dependency types discussed in the Specification, such as behavioral dependencies. For example, in Fig. 5 and paragraph [0069] of the Official Publication hereof, a

compound behavioral dependency is described with respect to a business model, composed of two simple dependency types – mandatory and disjunctive, as claimed in new claims 28-31. Mori's dependence relationships do not reach this level of complexity.

7) In the domain of project modeling, Bailey's ECA deals with task dependencies. However, the independent claims herein require the system to handle state changes in business components, not merely task dependencies. For example, claim 27 recites the element "propagating a change to a... business component". Translating Bailey's task dependencies to state-transition dependencies among the business components Bailey's ECA is far from obvious. It exceeds the abilities of the ordinarily skilled person to perform the necessary steps of translating changes in the project to events, mapping the project, and then mapping the dependencies to ECA rules. A translation to ECA rules would cover only a portion of the claimed business model, since in many cases the dependency is not between a single event to an action (1:1), but between a pattern of multiple events to an action (M:1) (recited in the claims as specified combinations of events and conditions), where the dependency semantics correspond to the type of pattern. Bailey does not handle patterns with multiple events across time as recited in new independent claims 28 and 30. In many cases expressing dependencies among tasks requires patterns to be detected covering multiple events representing complex interdependencies among states of various tasks.

8) In connection with independent claim 27 and new independent claims 28 and 30, Herbst, in discussing the Behavior Integrated Entity Relationship Model (BIER), states (page 12) that BIER "lacks constructs to directly express events and conditions. . . Therefore, the behavioral part of BIER is

particularly suited to describe transitional rules". The active dependency integration model disclosed and claimed in the present patent application provides dependency rules that represent an impact and effect analysis on dependent objects involving events and state transitions, i.e., changes in the business components. These objects differ from the transitional rules that the ordinarily skilled person would apply, incorrectly, if attempting to follow Herbst to create the claimed invention. Transitional rules are in essence constraints on the transition among different states of a single object. Extending the BIER model from its reliance on transitional rules to support dependency rules in my opinion is not even possible. They are too different. Transitional rules do not have the expressive power needed to express dependency rules. Furthermore, Herbst, at page 6, discusses a conceptual processing model (CPM) that is essentially an implementation of Bailey's Event-Condition-Action (ECA) rules. CPM lacks representation of a pattern or situation based on multiple events from which dependencies are derived. Modifying CPM to obtain the claimed invention is clearly beyond the abilities of one ordinary skilled in the art, as CPM simply lacks adequate expressive power.

9) Regarding the Mori/Bailey/Herbst/Parad combination as applied to dependent claim 2: Parad is concerned with continuous resource scheduling based on changes in requirements, rules, dependency or status in a particular domain. However, Parad's techniques do not map to the active dependency integration model that is claimed. Here, an expert rather than an ordinarily skilled person would be required in modifying Parad to apply to the impact/effect analysis discussed above. The rescheduling techniques in Parad do not apply to impact analysis, nor does Parad teach how to exploit multiple events in time drive resource management
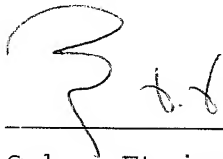
rescheduling as claimed in claim 2, which of course incorporates the limitations of its base claim 27.

10)   Regarding the Mori/Bailey/Herbst/Nye combination as applied to claims 9-10: Nye's event modeling approach does not handle an environment where events can affect data and thereby cause a propagation of effects through a business model to generate new events that can impact yet more data. It would be necessary for the ordinarily skilled person to modify Nye to remedy the deficiencies of Mori/Bailey/Herbst to achieve cooperation between the claimed situation awareness unit and active dependency integration unit to obtain the claimed result: outputting a functional state of the business model. The dependency concept in Nye relates to the ECA model, namely: an event triggers an action, and this action may emit additional events. This is a very basic type of dependency. It is not trivial to develop more complex types of dependencies from the basic dependency in Nye, such as the following complex dependency: event E0 depends on the fact that events E1, E2, E3 occurred exactly in the specified order within a period of less than 2 minutes. New claims 28 and 30 include conditions in that the in a situation dependencies and conditions comprise an order of occurrence and temporal relationships among the events. It is my opinion that applying the event model taught by Nye in combination with Mori/Bailey/Herbst would not be obvious for a person ordinary skilled in the art.

11)   To summarize, it is my considered opinion that the claimed invention is a useful advance in the field that, to my knowledge, has not been realized in the art, and is not obvious.

12) I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and

conjecture are thought to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application of any patent issued thereon.

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Opher Etzion,
Citizen of Israel

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Date: 5 | 1 | 2010